

EXHIBIT 21

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TQ DELTA, LLC,

Plaintiff,

v.

2WIRE, INC.,

Defendant.

Civil Action No. 13-1835-RGA

MEMORANDUM OPINION

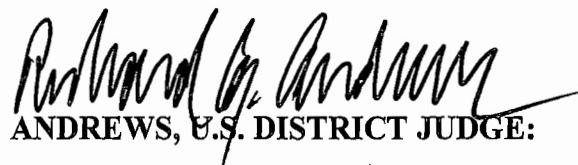
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June 28, 2021



ANDREWS, U.S. DISTRICT JUDGE:

Before me are multiple motions submitted by Plaintiff TQ Delta and Defendant 2Wire.

This memorandum opinion will address Plaintiff's Motion for Summary Judgment of Infringement (D.I. 1386) and Defendant's Motion for Summary Judgment of Noninfringement (D.I. 1385). The matters have been fully briefed. (D.I. 1387, 1388, 1419, 1429, 1452, 1457).

I. BACKGROUND

Plaintiff TQ Delta filed this lawsuit against Defendant 2Wire asserting infringement of numerous U.S. Patents. (D.I. 1). I divided the case into separate trials by patent "Family." (D.I. 280). The motions before me involve one of the Family 6 patents: U.S. Patent No. 8,462,835 ("the '835 patent"). Plaintiff moves for summary judgment of infringement with respect to claims 8 and 10 of the '835 patent (collectively, "the Asserted Claims"). (D.I. 1386). Defendant cross-moves for summary judgment of noninfringement with respect to the same claims. (D.I. 1385).

The '835 patent claims an apparatus in the field of data communications that counters the effects of impulse noise, which was a known issue for DSL ("Digital Subscriber Line") technology prior to invention.

Claim 8 of the '835 patent recites:

"An apparatus *configurable to adapt forward error correction and interleaver parameter (FIP) settings during steady-state communication* or initialization comprising:

a transceiver, including a processor, configurable to:

transmit a signal using a first FIP setting,

transmit a flag signal, and

switch to using for transmission, a second FIP setting following transmission of the flag signal,

wherein:

the first FIP setting comprises at least one FIP value,

the second FIP setting comprises at least one second FIP value, different than the first FIP value, and

the switching occurs on a pre-defined forward error correction codeword

boundary following the flag signal.

(D.I. 1-19, Ex. 19, '835 patent, claim 8) (emphasis added).

Claim 10 of the '835 patent recites:

The apparatus of claim 8, wherein a first interleaver parameter value of the first FIP setting is different than a second interleaver parameter value of the second FIP setting.

(*Id.*, claim 10).

II. STATEMENT OF UNDISPUTED FACTS

There are four allegedly infringing 2Wire products: 5031NV, 5168NV, 5168N, and 5268AC (collectively, “the Accused Products”). (D.I. 1387 at 1 n.1). The allegedly infringing functionality in the Accused Products is implemented by a Broadcom DSL chipset, found in each of the Accused Products. (*Id.* at 7; D.I. 1419 at 15). The 5031NV contains the BCM6368 DSL chipset, and the 5168NV, 5168N, and 5268AC each contain the same BCM63168 DSL chipset. (D.I. 1387 at 7). Both Broadcom chips support “dynamic change of interleaver depth functionality”—this is referred to as Dynamic D. (D.I. 1392-13, Ex. CC, Yu Dep., at 179:4–7; D.I. 1419 at 14). The Accused Products are held out to be compliant with the ITU-T’s G.993.2, or VDSL2 (“very high speed digital subscriber line 2”), standard, which provides a variety of information regarding standard functionalities of telecommunication devices like the Accused Products. (D.I. 1387 at 8; D.I. 1419 at 1).

III. LEGAL STANDARD

A. Summary Judgment

“The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” FED. R. CIV. P. 56(a). The moving party has the initial burden of proving the absence of a genuinely disputed material fact relative to the claims in question. *Celotex Corp. v. Catrett*, 477 U.S. 317,

330 (1986). Material facts are those “that could affect the outcome” of the proceeding, and “a dispute about a material fact is ‘genuine’ if the evidence is sufficient to permit a reasonable jury to return a verdict for the nonmoving party.” *Lamont v. New Jersey*, 637 F.3d 177, 181 (3d Cir. 2011) (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). The burden on the moving party may be discharged by pointing out to the district court that there is an absence of evidence supporting the non-moving party’s case. *Celotex*, 477 U.S. at 323.

The burden then shifts to the non-movant to demonstrate the existence of a genuine issue for trial. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586–87 (1986); *Williams v. Borough of West Chester, Pa.*, 891 F.2d 458, 460–61 (3d Cir. 1989). A non-moving party asserting that a fact is genuinely disputed must support such an assertion by: “(A) citing to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials; or (B) showing that the materials cited [by the opposing party] do not establish the absence . . . of a genuine dispute” FED. R. CIV. P. 56(c)(1).

B. Infringement

Infringement of a patent occurs when a person “without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent[.]” 35 U.S.C. § 271(a). “Literal infringement of a claim exists when every limitation recited in the claim is found in the accused device.” *Kahn v. Gen. Motors Corp.*, 135 F.3d 1472, 1477 (Fed. Cir. 1998).

IV. DISCUSSION

Plaintiff asserts that summary judgment of infringement of claims 8 and 10 of the ’835 patent is appropriate because the Accused Products meet every limitation of the Asserted Claims.

(D.I. 1387 at 1). Defendant presents two general arguments for noninfringement. (D.I. 1419 at 8–12). Defendant presents additional arguments with respect to specific claim limitations. (*Id.* at 13–17). I will address the arguments in that order.

First, Defendant argues that Plaintiff erroneously relies on the Accused Products' compliance with the VDSL2 standard to show infringement. The Asserted Claims cover optional features that are not essential to VDSL2, and thus the Accused Products can comply with the standard without having the optional features. (*Id.* at 8). Specifically, the OLR-3 type message, which communicates the new interleaver depth and, in doing so, supports Dynamic D functionality, is an optional feature of VDSL2. (*Id.*) (citing D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶ 63). Defendant also asserts that, in any case, Plaintiff cannot prove that Dynamic D is enabled in the Accused Products because whether it is turned on “is entirely dependent on the type and configuration of the network operator’s central office equipment.” (*Id.* at 9) (citing D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶ 64).

Plaintiff responds that it does not matter whether Dynamic D functionality is essential to the VDSL2 standard. (D.I. 1457 at 2–3). If the functionality covered by the patent claim is mandatory in the VDSL2 standard, the Accused Products' compliance with VDSL2 is sufficient to show infringement. (*Id.* at 2). If the functionality is optional, on the other hand, proof of standards compliance is insufficient; infringement would require showing that the functionality is implemented in the Accused Products. (*Id.* at 3). Plaintiff maintains that even if Dynamic D functionality is optional in the VDSL2 standard, that only means it needs to show that the Accused Products have Dynamic D functionality—rather than merely showing the Accused Products are VDSL2 compliant—in order to prove infringement of the Asserted Claims. (*Id.*).

I agree with Plaintiff. I assume the truth of Defendant's statement that Dynamic D is an optional functionality in the VDSL2 standard. While that means standards compliance is insufficient to show infringement, it does not prove noninfringement. Dynamic D functionality infringes if it reads on the Asserted Claims, regardless of whether it is mandatory in VDSL2. Taking the evidence in the light most favorable to Defendant, I also assume to be true that Dynamic D's enablement in the Accused Products cannot be ascertained. Whether the Accused Products can infringe when Dynamic D is not enabled, however, is a question of law (i.e., what constitutes implementation of an infringing functionality), not fact.

Second, Defendant relies on prosecution history disclaimer. Defendant maintains that the prosecution history shows that "configurable to"—the language of the claims—is narrower than "capable of," which is the language the inventor originally proposed. Defendant argues that the amended language requires that Dynamic D functionality not only be encoded but also enabled in the Accused Products to constitute infringement. (D.I. 1419 at 9–11). In support, Defendant cites to the Examiner's rejection of "capable of" (*id.* at 10) (citing D.I. 1393-3, Final Office Action of May 25, 2011, at 7), and suggestion of replacement with "configured to" (*id.*) (citing D.I. 1393-5, Final Office Action of Jan. 22, 2013, at 7). Plaintiff contends, on the other hand, that the term it ultimately used in the claim—"configurable to," not "configured to"—adequately disclaims scope (while still reading on the Accused Products) because it excludes apparatuses that do not already contain the hardware and software needed to perform the recited functionality without any rebuilding or recoding. (D.I. 1457 at 4–5).

I had not construed the term "configurable to" in this case as of the filing of the summary judgment motions at issue.

Subsequent to the briefing in this dispute, I construed—in another Family 6 case with a different defendant—the term “configurable to” as “includes the necessary hardware and software for performing the functionality recited in the claim without the need to rebuild, rewrite or recompile the code for, or redesign any of that hardware or software.” *TQ Delta LLC v. Adtran, Inc.*, No. 14-954-RGA, 2021 WL 1200595, at *3–5 (D. Del. Mar. 30, 2021). As I explained in that case, “configurable to” does require that the source code required to implement the claimed functionality be present in the invention, but the term does not require that the functionality be enabled in the invention’s initial configuration (i.e., as provided to a consumer). *Id.* at *5. Defendant makes additional arguments here, to wit, that the prosecution history disclaims the scope of “capable of,” and that “configurable to” must therefore mean something different (D.I. 1419 at 10), but I think the requirement that the functionality must be present “without the need to rebuild, rewrite, or recompile the code” adequately narrows the scope of the claim from the “capable of” language. I therefore agree with Plaintiff.

Having addressed these two preliminary issues, I now turn to the substantive infringement arguments related to the claim terms. A finding of literal infringement is appropriate “when every limitation recited in the claim is found in the accused device.” *Kahn*, 135 F.3d at 1477. Plaintiff alleges infringement of each limitation of the Asserted Claims and provides evidence for each of these allegations. (D.I. 1387 at 9–15). Defendant contests infringement with respect to four limitations of the Asserted Claims but does not rebut, provide evidence against, or otherwise dispute infringement of the other limitations beyond the two general noninfringement arguments that I have already addressed. I therefore focus my analysis on the limitations that Defendant disputes.

First, Defendant argues that the Accused Products are not “configurable to adapt forward error correction and interleaver parameter (FIP) settings” (i.e., Dynamic D functionality). (D.I. 1419 at 13–14). Second, Defendant asserts that the Accused Products do not enter “steady-state” communication. (*Id.* at 15). Third, Defendant contends that the Accused Products do not transmit a “flag signal” that comports with the Court’s construction of the term. (*Id.* at 16). Fourth, Defendant maintains that, when used in “real world” conditions, the Accused Products do not switch to using a second FIP setting following transmission of a flag signal. (*Id.* at 17). I will address each limitation dispute in turn.

1. Accused Products are “configurable to” Dynamic D functionality

Defendant asserts that the Accused Products as “configured in the real world” have Dynamic D disabled and therefore do not perform dynamic change of interleaver depth. (D.I. 1419 at 13). Defendant contends that tests by Dr. Cooklev, one of Plaintiff’s experts, only show that the Accused Products can perform dynamic change of interleaver depth in a laboratory setting when Dynamic D is manually turned on. (*Id.*; D.I. 1384 at 12). The tests do not show that Dynamic D functionality was active in any of the configurations actually used based on service profiles provided by AT&T. (D.I. 1419 at 14; D.I. 1384 at 12). When the Accused Products are configured as they would have been used by AT&T in the real world, Defendant maintains, they do not use Dynamic D functionality. (D.I. 1419 at 14) (citing D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶¶ 100, 127, 140, 144, 149, 154, 169).

Defendant further argues that to the extent Plaintiff relies on the Broadband Forum Technical Report TR-115, its dynamic change of interleaver depth test is not itself sufficient to establish infringement because TR-115 does not “require the capture of the transmission of the flag signal.” (D.I. 1419 at 14) (citing D.I. 1392-14, Cooklev Reply Report, ¶ 12). Because the

test does not perform the infringing functionality in accordance with the “flag signal” limitation in the Asserted Claims, Defendant argues, TR-115 cannot by itself establish infringement. (D.I. 1419 at 14).

Plaintiff, on the other hand, maintains that it only needs to show the Accused Products are “configurable to” perform Dynamic D (i.e., “without the need to rebuild the hardware or recode the software”) and that the evidence it has provided establishes this fact. (D.I. 1457 at 3, 6). Dr. Cooklev’s tests, Plaintiff argues, prove that the Accused Products can implement Dynamic D when requested to do so. (*Id.* at 6). No hardware or software modifications to the Accused Products were made before testing “out of the box” dynamic change of interleaver depth functionality. (*Id.* at 7) (citing D.I. 1392-5, Ex. U, Cooklev Expert Report, ¶ 30).

With regard to TR-115, Plaintiff contends that it does not rely on TR-115 by itself to show infringement. (D.I. 1457 at 7) (citing D.I. 1387 at §VI.B). The purpose of the TR-115 results, rather, are merely to show that the Accused Products perform dynamic change of interleaver depth and therefore implement Dynamic D. (*Id.*) (citing D.I. 1387 at 10–11). Plaintiff further asserts that Defendant’s UberMatrix document indicates the Accused Products “comply with the requirement that they must pass the tests identified in TR-115.” (D.I. 1457 at 7).

When “determining whether a product claim is infringed . . . an accused device may be found to infringe if it is reasonably capable of satisfying the claim limitations, even though it may also be capable of non-infringing modes of operation.” *Hilgraeve Corp. v. Symantec Corp.*, 265 F.3d 1336, 1343 (Fed. Cir. 2001). If an invention must be modified—beyond recited alteration or assembly before operation—for it to be infringing, however, the invention’s capacity to infringe post-modification is insufficient to support a finding of infringement. *High Tech Med. Instrumentation v. New Image Indus., Inc.*, 49 F.3d 1551, 1556 (Fed. Cir. 1995). The

dispositive question, therefore, is whether enabling Dynamic D in the Accused Products constitutes a modification. Caselaw indicates that modification in the context of software claims typically means altering the source code.

In *Finjan, Inc. v. Secure Computing Corp.*, the software claims at issue “describe[d] capabilities without requiring that any software components be ‘active’ or ‘enabled.’” 626 F.3d 1197, 1204–05 (Fed. Cir. 2010). “The system claims recite software components with specific purposes,” such as “a logical engine *for preventing* execution” or “a communications engine *for obtaining*.” *Id.* (internal quotations omitted). The relevant claims at issue in *Finjan* cover capability, and the claim language “does not require that the program code be ‘active,’ only that it be written ‘for causing’ a server . . . to perform certain steps.” *Id.* at 1205. Moreover, the “software for performing the claimed functions existed in the products when sold.” *Id.* Though the users of the claimed invention needed to “‘activate the functions programmed’ by purchasing keys,” the code underlying the function was present in the product at sale, and there was no “evidence that customers needed to modify the underlying code to unlock any software modules” that gave rise to the infringing functionality. *Id.*

Similarly, in *Fantasy Sports Props., Inc. v. Sportsline.com, Inc.*, the Federal Circuit held that in order to infringe a claim, the source code underlying the infringing functionality “must be written in such a way as to” allow the user “to utilize the function . . . without having to modify that code.” 287 F.3d 1108, 1118 (Fed. Cir. 2002). When a user activates “the functions programmed into a piece of software . . . , the user is only activating means that are *already present in the underlying software*.” *Id.* Enabling or activating code “already present in the underlying software” does not constitute modification if it does not require alteration of the code

itself. *See id.* If the source code gives the user means to utilize the infringing functionality, the code infringes “regardless whether that means is activated or utilized in any way.” *Id.*

Here, both parties’ experts agree that enabling Dynamic D activates functionality that is already present in the source code of the Broadcom chips in the Accused Products. Dynamic D functionality is enabled at lines 138–39 of the source code when an Accused Product receives a specific “O-MSG1” message with non-zero values for the “interleaverReconfigSupportedUS” or “interleaverReconfigSupportedDS” variables. (D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶¶ 65) (citing 1391-10, Ex. J, Madisetti Expert Report, ¶¶ 160, 207; D.I. 1395-3, Ex. C, Goldberg Rebuttal Report, ¶¶ 31, 32). One of Defendant’s experts, Dr. Goldberg, specifically opines:

That is, in order for dynamic interleaver depth to be enabled by the code in process_omsg1() that Dr. Almeroth discusses on the first page of Attachment E to his F6 report, it must be the case that (1) both VDSL_SRA and DYNAMIC_D are defined, (2) the call to SoftDslDpApiEnableDynamicDandF() at line 136 returns a value with a one in the lowest bit, (3) the RA_SRA and/or RA_SOS bits of the commonRateAdaptationFlagsDS and/or commonRateAdaptationFlagsUS flag variables are set to 1, and (4) the received O-Msg-1 contains interleaverReconfigSupportedUS and/or interleaverReconfigSupportedDS fields, respectively, that are non-zero.

(D.I. 1395-3, Ex. C, Goldberg Rebuttal Report, ¶ 32). None of these conditions for enabling Dynamic D indicate changes to the source code. They merely require that particular variables in the relevant call signals or auxiliary code have specific values, or that certain executed functions (e.g., SoftDslDpApiEnableDynamicDandF()) return specific values (i.e., “a value with a one in the lowest bit”). (*See id.*) Because the source code underlying Dynamic D’s functionality remains intact, therefore, no modification of source code is necessary to enable Dynamic D.

Like in *Finjan*, the Asserted Claims also recite capability in that they are “configurable to” perform certain functions. The claim language in the Asserted Patents recites an apparatus and a transceiver “configurable to” perform specific functions, similar to the “logical engine for preventing execution” in *Finjan*. As in that case, nothing in the claim language here indicates

that the functions of the apparatus or transceiver provided in the source code need to be “active” in order to meet the claim limitation, because the invention can perform the recited functionality without rewriting the code.

To be sure, the Federal Circuit did find in *Telemac Cellular Corp. v. Topp Telecom, Inc.* that the telephone product at issue was non-infringing even if its source code—without modification—could perform the infringing functionality. 247 F.3d 1316, 1330 (Fed. Cir. 2001). *Telemac* is distinguishable, however, because there the accused product could not exercise the infringing functionality. *Id.* at 1321. The accused product in *Telemac* was “preprogrammed to recognize and block placement of international calls.” *Id.* The invention at issue was a “complex billing algorithm” for telephone calls that included international calls and rates in its calculations. *Id.* As manufactured and sold, the accused product, however, could not be used to place international calls. *Id.* Nor was there any way to enable the ability to place international calls in the phones; the phone hardware simply could not perform the function. *See id.* Because the accused product could not place international calls, the Federal Circuit found that the international rates, and related calculations, were not included in the billing algorithm of the accused product and that it therefore was not infringing. *Id.*

Viewing the evidence in the light most favorable to Defendant, both parties’ experts at minimum agree that Dynamic D can be enabled if certain conditions are met. (D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶¶ 65) (citing 1391-10, Ex. J, Madisetti Expert Report, ¶¶ 160, 207; D.I. 1395-3, Ex. C, Goldberg Rebuttal Report, ¶¶ 31, 32). If someone were to issue the correct commands and meet these conditions, Defendant does not dispute that the user could enable Dynamic D. Because there are no hardware or firmware features that prevent the Dynamic D source code from exercising infringing functionality when activated, *Telemac* is inapposite.

There is no genuine dispute that the source code of the Accused Products encodes Dynamic D functionality. Activation of Dynamic D does not require modification of the source code. I therefore find that the Accused Products are “configurable to” perform Dynamic D functionality.

2. Accused Products are in “steady-state communication” during Showtime

Defendant argues that the Accused Products are noninfringing because Plaintiff has not shown that they enter “steady-state communication” as the claims require. (D.I. 1419 at 15). I construed “steady-state” to mean “the state of the transceiver reached after all initialization and training is completed in which user data is transmitted or received.” (D.I. 540 at 3). “Showtime,” which Defendant notes is offered by Plaintiff as the relevant “steady-state,” is defined by the VDSL2 standard as “[t]he state of either the VTU-O or VTU-R that is reached after the initialization procedure has been completed in which bearer channel data are transmitted.” (D.I. 1419 at 15) (quoting D.I. 1431-4, Ong Decl., Ex. 4 at 7). Because the VDSL2 definition of Showtime refers to a particular type of initialization procedure (i.e., “in which bearer channel data are transmitted”), Defendant maintains that this definition does not, on its own, meet the construction of “steady-state,” which refers to the state “after all initialization and training is completed.” (D.I. 1419 at 15). Defendant further asserts, “The Broadcom firmware code performs updates to parameters (e.g., coefficients) used for echo cancellation, FEQ (frequency-domain equalization), and TEQ (time-domain equalization) during showtime.” (*Id.*) (quoting D.I. 1395-3, Ex. C, Goldberg Rebuttal Report, ¶ 43).

Plaintiff, on the other hand, argues that Showtime per VDSL2 is the claimed “steady-state communication.” (D.I. 1457 at 7). Specifically, Plaintiff maintains that it is irrelevant whether the Accused Products may update coefficients during Showtime for non-FIP settings.

(*Id.* at 8). Updating parameters after they are established during “initialization and training” does not signal that initialization and training remain incomplete. (*Id.*) (citing D.I. 1392-12, Ex. BB at ¶¶ 55–59). This is especially true, Plaintiff argues, because one of the main features of the Asserted Claims is the updating—during “steady-state communication”—of FIP values established during “initialization and training.” (*Id.*).

To raise a disputed material fact about whether Showtime is the claimed “steady-state communication,” Defendant needs to provide evidence that either: (1) not “all initialization and training” is completed prior to entering Showtime, or (2) if some initialization or training persists, that it does not involve transmitting or receiving user data. Viewing the evidence in the light most favorable to Defendant, I assume the truth of Defendant’s statement that the Accused Products update parameters—such as coefficients for echo cancellation, TEQ, and FEQ—during Showtime. I also assume to be true that, per the VDSL2 standard, Showtime refers to initialization in which “bearer channel data are transmitted.”

Defendant nevertheless presents insufficient evidence for a reasonable jury to find that at least some “initialization and training” remains incomplete prior to entering Showtime. Defendant asserts that the Accused Products update certain parameters. It also offers expert opinion that certain “coefficients are ‘computed during the training phase using a standard LMS algorithm’ and ‘further updated in showtime.’” (D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶ 123) (citing D.I. 1395-3, Ex. C, Goldberg Rebuttal Report, ¶ 44). But Defendant does not present facts or expert opinions to assert—nor does it otherwise argue—that updating coefficients “computed during the training phase” constitutes initialization or training. Without doing so, there cannot be a genuine dispute of material fact. In fact, I think the most reasonable reading of Defendant’s expert’s opinion is that if a coefficient is computed during the training phase and

“*further* updated” during Showtime, then Showtime and the “training phase” are two separate stages, which suggests Showtime takes place after “all initialization and training.”

In any event, if updating certain parameters during Showtime were to constitute “initialization and training,” Defendant does not present sufficient evidence for a reasonable jury to find that updating those parameters would involve transmitting or receiving user data.

First, Defendant presents no affirmative evidence that updating coefficients for echo cancellation, TEQ, or FEQ (or parameters generally) involves transmitting or receiving user data. In fact, Defendant does not mention user data at all except to indicate that the VDSL2 standard indicates that Showtime occurs after all initialization is completed in which bearer channel data are transmitted. Without connecting this portion of the standard definition to the facts in the case, however, highlighting the standard does not present a genuine dispute of material fact.

Second, Defendant’s expert states that certain “coefficients are ‘computed during the training phase using a standard LMS algorithm’ and ‘further updated in showtime.’” (D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶ 123) (citing D.I. 1395-3, Ex. C, Goldberg Rebuttal Report, ¶ 44). Nothing in this statement, however, indicates that the updates during Showtime involve transmitting or receiving user data. Indeed, the only reference to how the coefficients are computed indicates they are generated algorithmically, which is typically independent of user input. Thus, Defendant has not presented any genuine dispute of material fact that would lead a reasonable jury to find that parameter updates during Showtime constitute “initialization and training . . . in which user data is transmitted or received.”

I therefore find that the Accused Products are in “steady-state communication” during Showtime.

3. Accused Products' SyncFlag used for Dynamic D recites the "flag signal"

Defendant argues that the Accused Products are noninfringing because they do not transmit a "flag signal." (D.I. 1419 at 16). I construed "flag signal" as a "signal used to indicate when an updated FIP setting is to be used (the signal does not include the FEC codeword counter value upon which the updated FIP setting is to be used)." (D.I. 540 at 2). Because the SyncFlag identified in the VDSL2 standard does not "indicate when an updated FIP setting is to be used," Defendant argues, the SyncFlag is not the claimed "flag signal." (D.I. 1419 at 16).

To assert that the SyncFlag is not the claimed "flag signal," Defendant makes two arguments. First, Defendant contends that the SyncFlag is used for a variety of purposes in addition to "configuring interleaver parameters," such as coordinating bit swapping. (*Id.*). Second, Defendant maintains that even when used to configure interleaver depth, the SyncFlag does not "indicate when an updated FIP setting is to be used" because the SyncFlag is contentless. (*Id.*) (citing D.I. 1395-8, Ex. H, Jacobsen Rebuttal Report, ¶ 7). Defendant further argues that the SyncFlag is "just the sync frame from the prior VDSL2 superframe with the bits inverted" and therefore does not contain information about the FIP settings. (D.I. 1419 at 16–17).

Plaintiff, on the other hand, contends that the SyncFlag is the claimed "flag signal" because it can "indicate when an updated FIP setting is to be used." (D.I. 1457 at 9). First, Plaintiff asserts that the SyncFlag need only "indicate when an updated FIP setting is to be used" to be the claimed "flag signal"; whether the SyncFlag additionally serves other purposes is irrelevant. (*Id.*). Second, Plaintiff contends that it is similarly irrelevant whether the SyncFlag is contentless because it does not rely on its content to "indicate when an updated FIP setting is to be used." (*Id.*). Plaintiff maintains that deposition testimony by Defendant's expert, Dr. Jacobsen, supports this second point. (*Id.*). When asked whether transmitting a sync flag in

response to new interleaver parameters would indicate the new parameters would be used, Dr. Jacobsen responded “it would indicate that you have acknowledged that we will use those new parameters.” (D.I. 1391-4, Ex. D, Jacobsen Dep. at 717:5–15). Plaintiff further cites to statements by its own expert, Dr. Madisetti, that “the far-end transceiver that transmits the OLR request knows whether the request specifies an increased or decreased interleaver depth and knows exactly when the switch to using the updated FIP setting will occur based on this knowledge and on the time that it receives the SyncFlag.” (D.I. 1457 at 10) (citing D.I. 1392-12, Ex. BB, ¶ 36).

I agree with Plaintiff that the SyncFlag is the claimed “flag signal.” Since the construction of “flag signal” does not preclude functions other than to “indicate when an updated FIP setting is to be used,” any factual dispute as to whether the SyncFlag serves other purposes is not material. Taking the evidence in the light most favorable to Defendant, I assume the SyncFlag is contentless and does not contain information about the FIP settings because the SyncFlag is “just the sync frame from the prior VDSL2 superframe.” The dispositive question, therefore, is whether there is any genuine dispute of material fact as to whether the SyncFlag can, despite being contentless, “indicate when an updated FIP setting is to be used.”

The lack of content in the SyncFlag is irrelevant, however, because the claimed functionality requires only that the SyncFlag indicate *when* an updated FIP setting is to be used, not *what* the FIP setting actually is. Moreover, Defendant’s expert, Dr. Jacobsen, acknowledges that receipt of the SyncFlag serves as a signal to indicate that the new FIP settings are to be used. (D.I. 1391-4, Ex. D, Jacobsen Dep. at 717:5–15). Taken together, there is no genuine dispute of material fact that the SyncFlag “indicates when an updated FIP setting is to be used.”

4. Accused Products do “switch to using for transmission a second FIP setting following transmission of the flag signal”

Defendant argues that, at best, Plaintiff has only provided evidence that the Accused Products can perform the claimed functionality in laboratory settings, and that when configured as they are used in the real world, the Accused Products do not switch to a second FIP setting. (D.I. 1419 at 17). Plaintiff responds that it is irrelevant whether the Accused Products perform the claimed functionality when configured as used by customers. (D.I. 1457 at 10). A finding of infringement is appropriate, Plaintiff maintains, because it is undisputed that the Accused Products are “configurable to” perform the claimed functionality. (*Id.*).

I agree with Plaintiff. There is no genuine dispute between the parties that the source code of the Accused Products encodes the claimed functionality, and that no rebuilding or recoding is necessary to exercise that functionality. I therefore find that the Accused Products do “switch to using for transmission a second FIP setting following transmission of the flag signal.”

V. CONCLUSION

For these reasons, I will grant Plaintiff’s motion for summary judgment of infringement and deny Defendant’s cross-motion for summary judgment of noninfringement.

An Order consistent with this opinion will be entered.